Promoting Heart Health

An Honors Thesis (HONRS 499)

by

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Abstract

The declining cardiovascular health of America has been a popular topic for a number of years as cardiovascular disease continues to be the leading cause of death in our country. One of the most important tools towards beating cardiovascular disease is early detection and prevention of associated risk factors, such as high blood pressure and obesity. In an effort to raise awareness about cardiovascular health, I organized a health fair, which took place at Reid Hospital and Health Care Services. The purpose of the health fair was to create an opportunity for individuals in the area to identify any potential cardiovascular risk factors they may possess, hopefully prompting them to take action against their potential heart disease. With the help of Reid Hospital staff, blood pressure, blood sugar, and body mass index testing were all offered free of charge. Participants were also given the opportunity to meet several members of the Reid Hospital Heart Services staff and schedule additional screenings. 174 people participated in the risk factor screening and as a result of their findings, 27 heart scans, 14 lung scans, and 11 vascular scans were scheduled to further investigate their overall health.

Acknowledgements

I would like to thank Mrs. Tonya Skalon for advising me through this project. She provided me with the wonderful opportunity to work with Reid Hospital and Health Care Services.

I would like to thank the employees of Reid Hospital and Health Care Services for their help with the preparation, advertising, and execution of the health fair.

Author's Statement

Many of us only associate doctor appointments with illness; if a person has a sore throat or a fever he/she will make an appointment to be seen. The issue with this mentality is that it leaves little room for detection of problems which may not be preceded by symptoms, including cardiovascular issues. Although it is true that symptoms including chest pain, arm pain, and jaw pain are often associated with heart attacks and other cardiac events, for at least 25% of patients, sudden death is their only cardiac "symptom" (Greenland, 2001). For patients with this type of subclinical disease, preventative screenings are of extreme importance and are quite possibly the key to saving their lives. For example, a patient who is asymptomatic may undergo a health screening and realize that his/her blood pressure at that time is considered to be hypertensive. This would hopefully encourage him/her to make an appointment with their family doctor, and if necessary, undergo further testing to identify the cause of the hypertension. Because cardiac risk factor screening is such a valuable tool, I thought it would be both beneficial for myself as a learning opportunity, and for the community as a wellness promotion to arrange a mini health fair to take place at Reid Hospital and Health Care Services in Richmond, Indiana as my Honors Thesis Project.

This semester I have been completing an internship at Reid Hospital in Richmond, IN with the Heart Services department, as the last requirement for my undergraduate degree in Exercise Science. My undergraduate degree in Exercise Science has prepared me for physician assistant school, which I will begin in the fall at Butler University. I hope to one day to specialize in Cardiology so that the idea of undertaking this type of a project was very much inspired by my future goals. Upon starting my internship, I briefly mentioned to one of my site coordinators that I was interested in planning and implementing a project during the semester. I discussed a rough

outline with her of what I had in mind, as I knew that the final plans would be contingent upon the resources that I would be allotted by the facility. I explained to her that I wanted to arrange a health fair which would consist of three different screenings and would be offered free of charge to all members of the community. She seemed very excited about my idea and referred me to Tajuan Stoker, who is the Wellness Coordinator at Reid, and has organized similar events in the past for the hospital employees' wellness program. However, before I met with Tajuan I wanted to construct a detailed plan that laid out my project objectives.

While brainstorming what type of activities I could include in the health fair, first I had to consider what risk factors would be important for people to have tested in order to assess their level of cardiac fitness, as well as what measurements would be feasible that could be obtained in a public setting. Blood pressure was the first measurement that I considered because it is a simple yet vital and noninvasive value to obtain. Hypertension can lead to several cardiac issues including left ventricular hypertrophy, coronary artery disease, and congestive heart failure (Riaz, 2012). I also planned on assessing body mass index at the event due to the fact that recent studies have shown an strong correlation between obesity and nonfatal or fatal coronary heart disease. A 14-year study conducted on middle aged men and women revealed that women with a BMI of 23 to 25 had a 50% increased risk of coronary heart disease and men with a BMI of 25 to 29 had a 72% increased risk (Eckel, 1997). Lastly, I was aware that Reid Hospital's Laboratory included a Cholestech machine which could be used to analyze total cholesterol, HDL and LDL using a mere drop of blood. I thought it would be very useful for participants to know their cholesterol levels due to the correlation between high cholesterol and atherosclerosis. Hyperlipidemia is highly prevalent in the United States with more than 102 million adults having a total cholesterol value greater than 200 mg/dL (Woznicki, 2012).

During my meeting with Tajuan, we discussed my ideas and he was very enthusiastic about the plan, especially my proposal to give each participant a folder with materials promoting Reid's heart scans, lung scans, and vascular screenings. We then discussed what date would be appropriate for the event to take place. I wanted the fair to take place during the month of February due to the fact that it is National Heart Awareness Month. Reid hospital was already planning a heart celebration on February 20th for having received a "3 star" rating from the Society of Thoracic Surgeons, placing them in the top 12% of 900 heart programs nationwide. This is the highest rating a program can receive and is a wonderful reflection of the success of Reid's Heart Services team. We decided that it would be appropriate to have the fair take place on the same day in order to coordinate both events into one large event, therefore emphasizing prevention as a part of the celebration activities. We planned for the screenings to take place between the hours of 10:00 a.m. and 2:00 p.m. so that in addition to the community members' involvement, there would be a large number of hospital employees that would be able to participate during their lunch hours.

Once we decided upon a date and time, we began discussing what departments needed to be involved in order to insure that all of the details were accounted for in promoting an interdisciplinary approach. Dietary, Laboratory, and Community Relations were the main departments that we needed to contact and meet with first, in order to make sure that my plans for specific testing were feasible. Dietary needed to be involved because when I initially shared with Tajuan that I was going to have participants give me their height and weight in order to calculate BMI, he explained that in his experience many people will either not know their height and weight or give inaccurate values. He suggested that we use the stadiometer that the Dietary department owns and has operated during health fairs in the past. I agreed that using the

stadiometer would be a good idea as long as there would be privacy for the participants, because I did not think people would be comfortable being weighed in a public setting. The Laboratory needed to be contacted to make sure that the Cholestech machine was available to be used and that it would be acceptable to use the machine in a setting where the hospital would not be reimbursed for the supplies and testing. Next I contacted the hospital Laboratory and concerning staffing availability. Although I am a part-time Laboratory employee, we would need additional volunteers from the Laboratory to assist in running the machine during the fair, due to the large volume of participants we were expecting. Community Relations needed to be contacted to begin advertising the event, so as to inform the community that they would have the opportunity to receive free screenings.

Tajuan offered to speak with the Dietary department. As an employee of the Wellness department, he often worked closely with Dietary due to the impact nutrition has on wellness. I personally spoke with the Laboratory due to my familiarity with the staff and procedures in that department. When I brought my idea to the attention of the Laboratory director he was somewhat skeptical about using the Cholestech machines, because he was concerned about the accuracy of the readings and whether or not the machines would be properly calibrated. He said that he would speak with the employee that was in charge of the screening equipment and obtain her opinion. I set up a meeting to speak with her the following day, and she shared similar concerns about the accuracy of the results. We also discussed that in order for the results to be worth factoring into the participants' cardiac risk, he/she would need to fast prior to having their blood sample taken. Because the fair did not start until 10:00 a.m. and lasted until 2:00 p.m., we decided that it was probably unrealistic to assume that participants would fast before coming. In addition to these issues, each of the Cholestech cartridges cost approximately seventeen dollars.

We were preparing for 300 participants, therefore the total cost for this type of testing with no reimbursement was not an option. Considering all of these factors, we decided that it would be more practical and useful for the participants involved. to offer blood glucose testing rather than cholesterol screening. This type of testing is a very quick and simple process, and due to the strong correlation between diabetes and heart disease, it is an important piece of information for a participant to consider in assessing their cardiovascular risk. Studies have shown that the risk of a cardiovascular related death is 3-fold higher in a person with type 2 diabetes (Sowers, 2001).

Advertising for the event involved a variety of mediums and was targeted both towards hospital employees and members of the community and surrounding areas. An advertisement was placed in the local newspaper, and ran the week prior to the event, along with an article about what the event would include. Advertisements were run on television billboards which are placed throughout the hospital, and all employees were e-mailed to remind them about the event. Information was also posted on the Reid Hospital Facebook page, which then provided it to every community member that was a "fan" of that particular page. Radio stations that service the area ran advertisements throughout the week prior to the fair, and the Community Relations department set up an interview between myself and G101.3 that would take place the morning of the fair.

During the weeks leading up to the fair there were several details that had to be addressed as well as follow-up, to make sure that the event ran smoothly and to ensure that all involved were well prepared. One of the main details that I took care of was the preparation of the results sheets which would be used to record the participants' information. This results sheet, along with several informational advertisements, would then be placed in a Reid Hospital folder and given to each participant to take with them at the end of their testing. It was important that the results

sheet included ranges for each of the tests so the participant would understand how to interpret his/her results after they left the fair. Tables 1.0, 1.1, and 1.2 represent the specific ranges provided for blood pressure, blood glucose, and body mass index respectively. This information was then forwarded to the Community Relations department. They then formatted them onto a sheet with the Reid Hospital logo and font, and made 300 copies.

Category	Systolic		Diastolic
Normal	Less than 120	*And*	Less than 80
Prehypertension	120-139	*Or*	80-89
Stage 1 Hypertension	140-159	*Or*	90-99
Stage 2 Hypertension	160 or higher	*Or*	100 or higher

Table 1.0. Classification of Blood Pressure, table from American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription.* Eighth ed. Baltimore: Lippincott Williams & Wilkins, 2009. 46-47. Print.

Category	Fasting Glucose	2 Hours Post Meal Glucose
Normal	70-99 mg/dl	Less than 140 mg/dl
Pre-diabetes	100-125 mg/dl	140-199 mg/dl
Diabetes	126 mg/dl or higher	200 mg/dl or higher

Table 1.1. Diagnostic Criteria for Diabetes Mellitus, table from American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription.* Eighth ed. Baltimore: Lippincott Williams & Wilkins, 2009. 233. Print.

Category	BMI (kg/m^2)
Underweight	Less than 18.5
Normal	18.5 - 24.9
Overweight	25.0 - 29.9
Obesity, Class I	30.0 - 34.9
Obesity, Class II	35.0 - 39.9
Obesity, Class III	40 and higher

Table 1.2. Classification of Body Mass Index for Adults, table from American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription.* Eighth ed. Baltimore: Lippincott Williams & Wilkins, 2009. 63.64. Print.

I also made a physical layout of where the tables, chairs, and equipment needed to be placed and coordinated that information with Environmental Services in order for them to know how to set up the morning of the fair. I decided to have the tables located along the main hallway that leads from the front entrance of the hospital to the cafeteria. This would place them right outside of the gift shop and next to the cafeteria.This section of the hospital has the highest amount of foot traffic from visitors and employees during their lunch time, since those would be the hours the health fair was taking place. I decided that I wanted to have two rectangular tables, each with two chairs so the technician and participant would each have a place to sit. Four volunteer phlebotomists from the Laboratory would each act as a technician, in one hour shifts, and I would be a technician for four full hours. At each of these rectangular tables the participants would have their blood pressure checked with an automatic machine, and confirmed manually if necessary. They would also have their blood glucose checked using a finger stick method and a hand held glucometer. On the other side of the hallway would be the BMI station with a stadiometer mounted to the wall and a curtain around it so the process would be private. There would be a small square table next to that station where a representative from the Wellness department would be present to go over results with the participants and inform them of the various heart, lung, and vascular screenings offered by the hospital at discounted prices. Lastly, there would be a table set up in the corner with employees from the Central Scheduling department of the hospital in order for participants to be able walk over and immediately schedule a scan if they were concerned about any of their results.

The morning of the event I reported to the G101.3 radio station at 7:30 a.m. for a brief on-the-air interview about what the health fair had to offer participants and to speak briefly about the heart award celebration which would be taking place at the same time. The interview went

very well and lasted for a total of three minutes; I was able to inform the listening audience about the screenings that would be offered and of their importance pertaining to one's cardiovascular risk factors and health. After the interview I arrived at the hospital to supervise the set up of equipment in case any questions arose. Everyone from the involved departments was very helpful throughout the preparation process and by 9:45 a.m., all of the stations were ready to begin testing.

The testing process went very smoothly and we had a high turnout, which included both members of the community and hospital employees from many different departments. Participants ranged from high school students to individuals in their 70's who had never had their blood glucose checked nor had they participated in any other health screenings. Some individuals did not fast prior to having their glucose checked, particularly those who came after 12:00 p.m. However, I provided values that accounted for what an acceptable glucose level was two hours after eating, which helped us and them to interpret their results. There were several individuals who were surprised by their blood pressure readings due to the fact that they were much higher than they normally register when they check it on their own or have them checked at their doctor's office. I explained to these individuals that with the added anxiety of having their levels checked in a public setting, it was not abnormal for their blood pressure to be slightly elevated. However, I also reminded them that hypertension can begin at any point in a person's life so they needed to continue to monitor their blood pressure to make sure that it was not perpetually high.

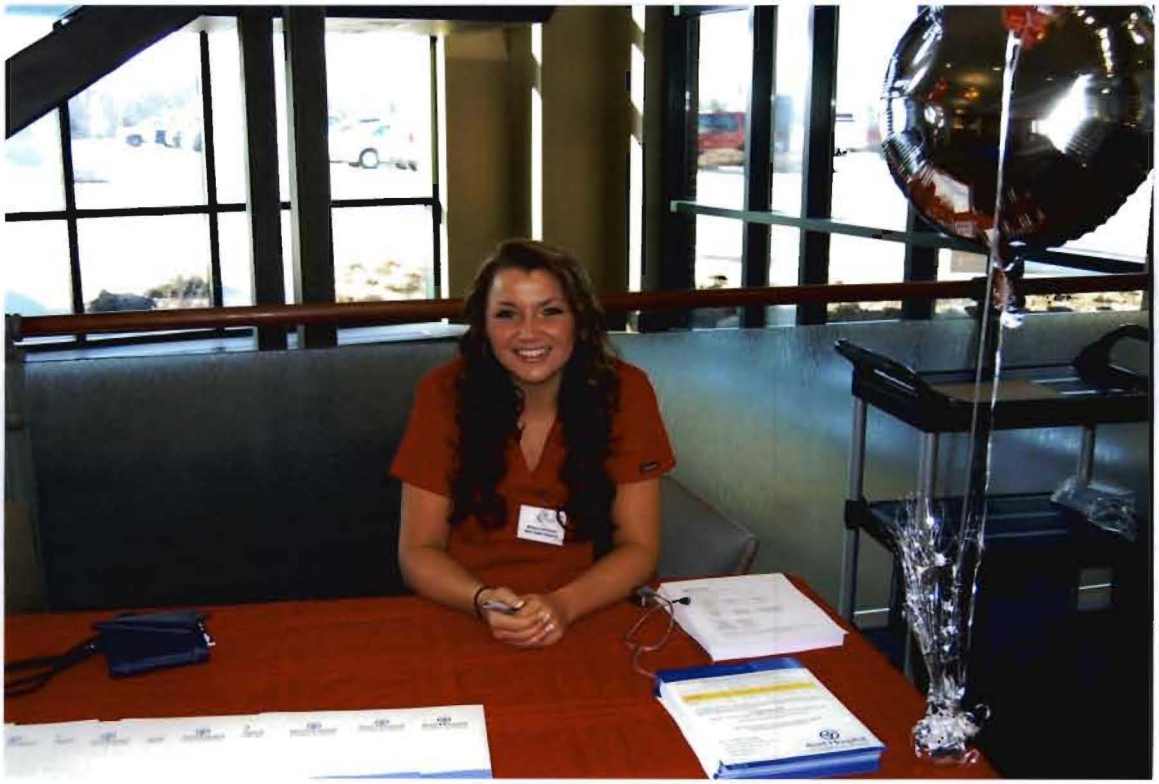
There was one instance in which myself and a nurse assisting with the testing felt that it was necessary to refer a man to the Emergency Room because of a severe hypertensive reading, although he was asymptomatic. Before beginning any screenings, he informed me that he did not

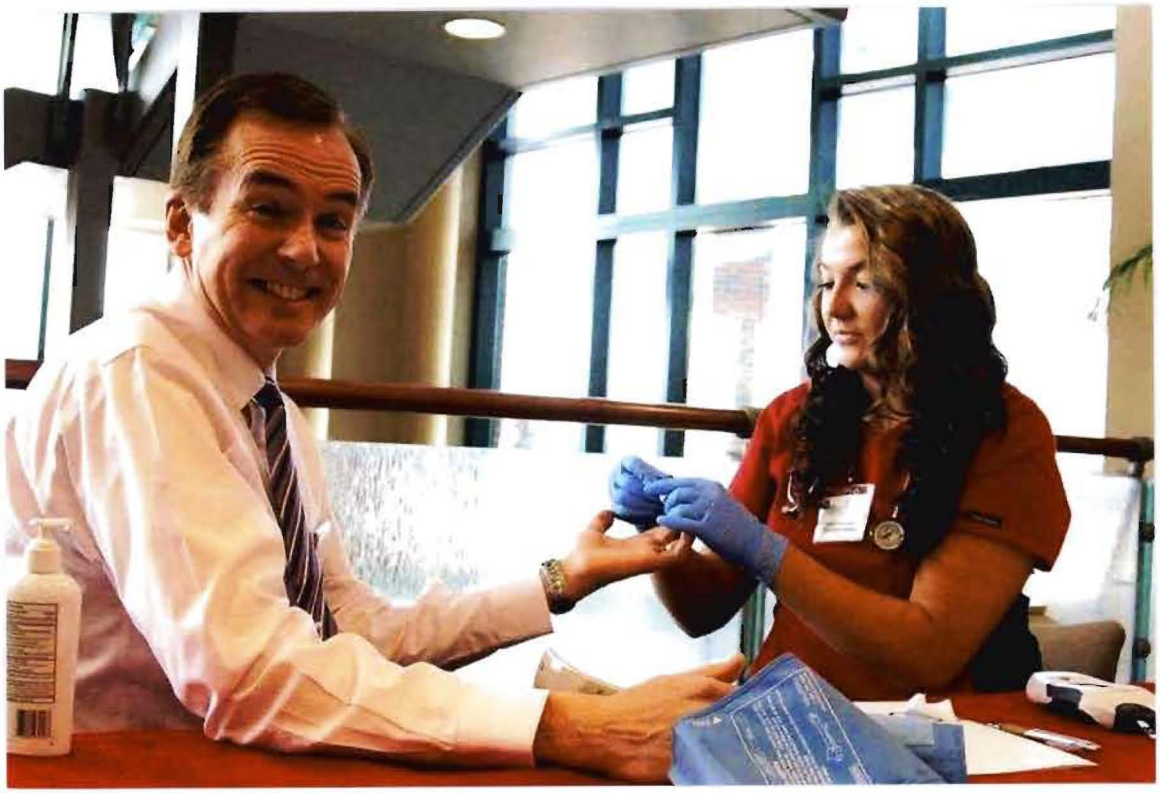
have his blood pressure or blood glucose checked regularly and that he had a family history of cardiovascular issues. When I took his blood pressure it registered at 206/110 mmHg, which was then confirmed using a manual cuff and stethoscope. I spoke to the nurse that was assisting at the various stations and she asked the man specific questions about how he was feeling to find out if he was experiencing any cardiac symptoms. He denied having any chest pain, arm pain, jaw pain, or shortness of breath. Even so, we urged him to allow us to direct him to the Emergency Room for an examination, and we explained to him that even without symptoms, it is incredibly unsafe to have a blood pressure that high at rest. He was resistant to our suggestions and instead insisted that he would call his family doctor when he left the hospital and stated that if his doctor recommended for him to come back, he would. We tried to convince him that it would be safest to go straight to the Emergency Room, however, we could not force him to do so, and as a result he left and we did not hear anything else from him.

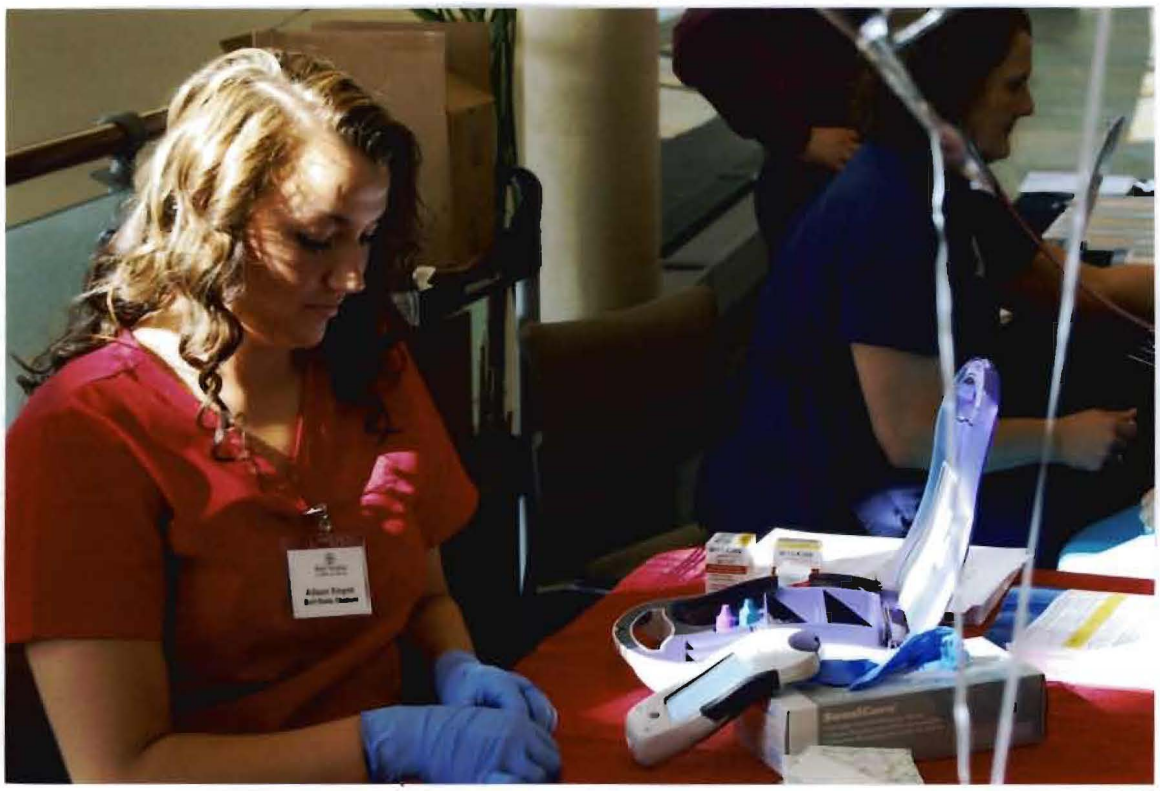
There were a total of 174 participants that received blood pressure and blood glucose screenings, as well as having their BMI calculated. Out of those 174 participants, 27 scheduled CT heart scans and 14 scheduled CT lung scans. There were also 11 vascular screenings scheduled and 16 laboratory wellness packages purchased. These numbers only reflect the participants that scheduled their testing while they were at the fair. They do not account for the individuals that took information about the screenings with them to review and possibly schedule in the future. I had the pleasure of working with one of the health fair participants in the Cardiac Diagnostics department when she came for her medication stress test. After getting concerning values for both her blood pressure and blood glucose, she scheduled a CT heart scan and did not receive a score within the normal range, which is a strong indicator for further testing. Her physician scheduled a medication stress test, which includes pictures of the blood flow through

the heart both before and after exercise, to identify any potential blockages in the cardiac vessels. Although I do not know what her stress test revealed, she was incredibly thankful that she made the decision to come to the health fair and have the initial screenings performed. She realized that she could be one of the lucky patients who identifies a problem with their heart prior to suffering a heart attack or stroke.

I believe that this was a very successful event for everyone involved. I was approached by several hospital employees who were very pleased with the outcome of the event and the additional services it brought to the hospital. There were suggestions from several employees that this type of event should take place several times a year in order to promote awareness of one's own risk factors. This would be an advantage for both the public and the hospital. The public would be offered free screenings and the opportunity to identify potential problems, and the hospital would benefit from the additional screenings scheduled by those with abnormal results. I appreciate the fact that this project allowed me to be exposed to many different aspects of health care and hospitals in general. I was able to work with many different departments within the hospital and experience the "behind the scenes" details and planning that take place in order to make an event of this nature happen. I feel as though I provided myself with a very valuable learning opportunity, while providing the community with a great service.





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Vascular
Screening


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Congratulations!
Reid Heart
Surgery Program
Top 12% in
the U.S. — again!


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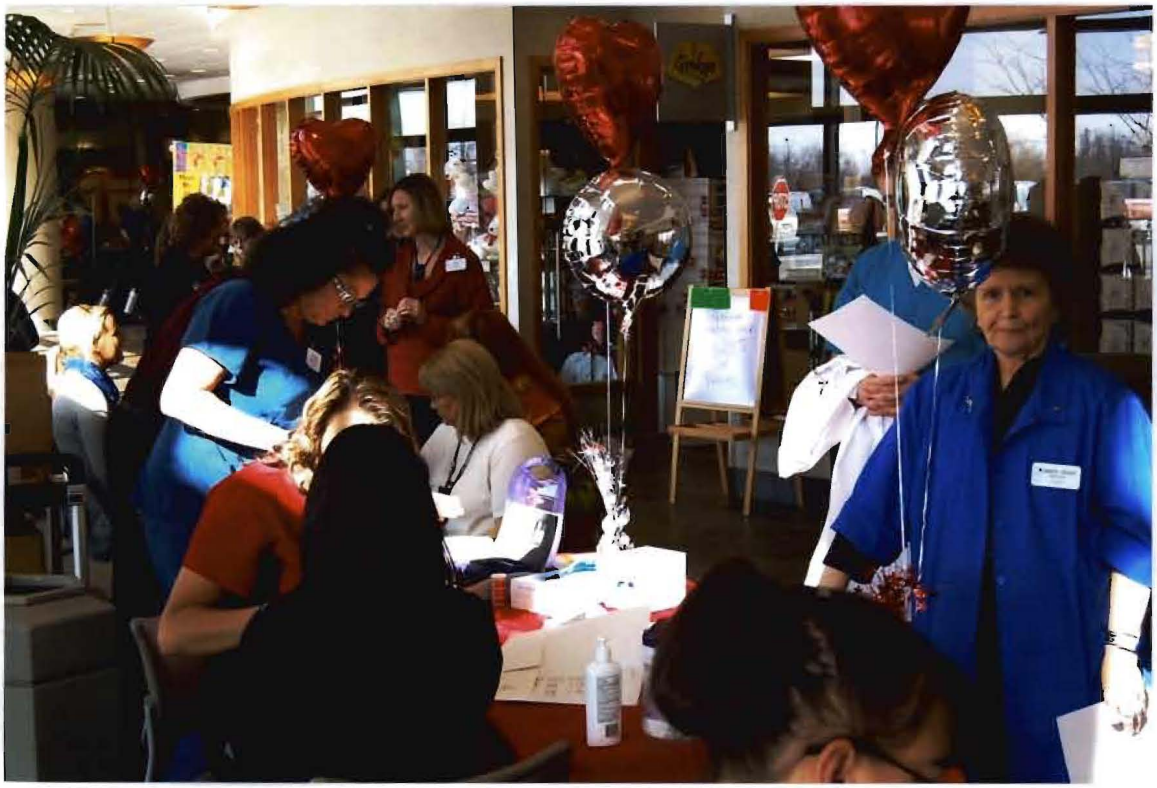


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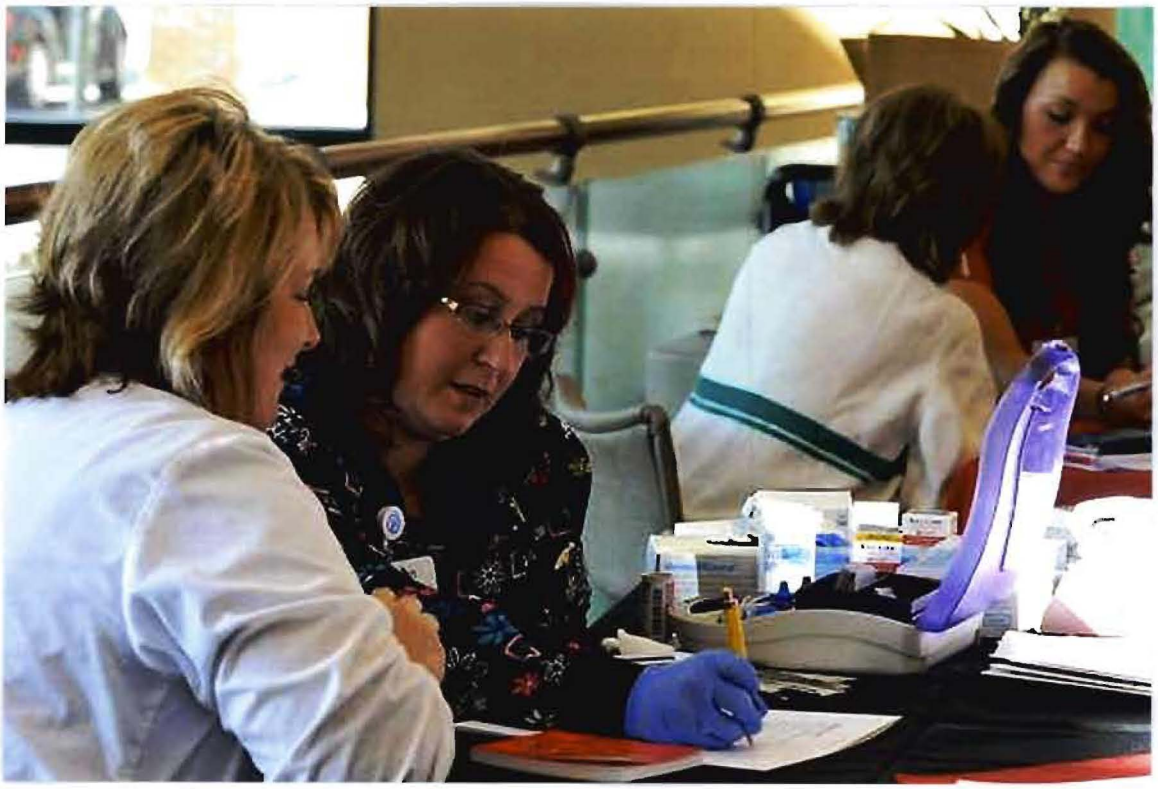


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